

Black-bellied Storm Petrel *Fregatta tropica*, Antarctic Prion *Pachyptila desolata*, and Thin-billed Prion *P. belcheri*: three species new to Kenya and East Africa

John H. Fanshawe, Peter Prince and Mary Irwin

Pelagic seabirds are one of the few groups of birds which are poorly known in Kenya (Lewis & Pomeroy 1989). Opportunities to study them are growing, however, with the mounting of off-shore boat trips to search specifically for such species (e.g. Taylor 1982), with an increase in game fishing from locations like Watamu, Kilifi and Shimoni, and with more regular collection of storm- or beach-cast material.

Prior to 31 December 1978 (the deadline for records to the current East Africa list (Britton 1980)), only seven entirely or predominantly pelagic or off-shore birds (families: Diomedidae, Procellariidae, Hydrobatidae, Phaethontidae, Sulidae and Fregatidae) existed on the Kenya list. By the end of December 1984, the completion date for the Kenya atlas (Lewis & Pomeroy 1989), a further six species had been added. The number of records increased from 11 to 25. This illustrates well the returns available from additional interest in this group.

In this paper, we report the addition of three further pelagic seabirds to the Kenya and East Africa list: Black-bellied Storm Petrel *Fregatta tropica*, Antarctic Prion *Pachyptila desolata*, and Thin-billed Prion *P. belcheri*. We also review prion taxonomy, discuss previous records in the light of this review, and suggest, as a result, the removal of one species, Broad-billed Prion *P. vittata*, from the Kenya list.

Black-bellied Storm Petrel *Fregatta tropica*

A fresh Black-bellied Storm Petrel *F. tropica* carcass found on Watamu beach (3° 22S, 40° 21E) on 27 June 1988 represents the first Kenyan and East African record for this species. With its distinctive plumage, the bird was identified easily: it had lost its left leg below the tarsal joint, but was otherwise entire. A black stripe descending from a dark chest to the undertail coverts is the main feature distinguishing this species from its congener, the White-bellied Storm Petrel *F. grallaria*.

The specimen was of a bird in active moult. This is significant both in view of the paucity of moult data for Procellariiformes and because it permits extra information about the status of the bird to be deduced. The primaries were in descendant moult, the left wing being slightly more advanced than the right. The secondaries were old, although the outer four on the right side appeared in better condition than the others, but were not judged to be freshly moulted. Secondary moult in both wings was symmetrical. The greater coverts seemed to be new, as were the carpal coverts, while the median, lesser and primary coverts were all old. We scored moult using the criteria outlined in Ginn & Melville (1983) (see Table 1).

The outer five primaries and secondaries were heavily abraded, bleached and brown in appearance. The tail, by comparison, contrasted markedly with the primaries, being much fresher, less worn and black in colour. Together, these features suggest two generations of feathers. We can be certain that the bird was not a juvenile entering its first winter owing to wing feather age and condition. Furthermore, it even seems unlikely that the storm petrel was entering its second winter, but more likely its third or

later. Nevertheless, one might have expected the bird to have moulted its outer primaries during its second winter; that it did not do so is a mystery.

Table 1. *Stage of moult in the wing and tail of the Watamu beach-cast Black-bellied Storm Petrel*

Wing (feathers are listed from the body out to wing tip)

| Feather numbers | Secondaries | | | | | | | | | | Primaries | | | | | | | | | | |
|-------------------|-------------|---|---|---|---|---|---|---|---|---|-----------|---|---|---|---|---|---|----|---|---|---|
| Body (12 11 10 9) | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| Left (1) | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 4 | 4 | 3 | 0 | 0 | 0 | 0 | 0 |
| Right (1) | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 4 | 3 | 1 | 0 | 0 | 0 | 0 | 0 |
| Tail | 6 | 5 | 4 | 3 | 2 | 1 | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | | | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | | | | |

One possible explanation is that loss of a leg, and perhaps part of the tail at some stage, had upset the normal moult sequence. British Storm Petrels *Hydrobates pelagicus*, Wilson's Storm Petrels *Oceanites oceanicus*, and Leach's Storm Petrels *Oceanodroma leucorhoa* suffer occasional injuries to their feet and legs, and, although these injuries are not thought to hinder them greatly on the breeding grounds, it may make them more susceptible to wrecking in poor weather conditions (Love 1984, Marchant & Higgins 1990). It is generally thought that these injuries are caused by predatory fish attracted by petrels' pattering their feet on the sea surface. In United Kingdom colonies, 1-2 per cent of birds have such injuries. The handicap of poor plumage condition may also explain why the bird succumbed.

On measurements, the bird can be sexed with reasonable confidence as a female. Severe primary abrasion means that the wing might have been expected to be rather short, but it actually falls above the published range. The culmen and tarsus fall just inside and outside of their respective ranges, which suggests, after allowing for possible shrinkage, that this bird was a large individual (see Table 2).

Circumpolar in distribution, the Black-bellied Storm Petrel occurs in both Subantarctic and Antarctic waters, breeding at South Georgia, South Orkney, South Shetland, the Crozets, Kerguelen, Auckland, Bounty and Antipodes Islands (Marchant & Higgins 1990). As well as wintering south and north of the equator in the Atlantic and Pacific Oceans, Black-bellied Storm Petrels have been recorded as far north as the Arabian Peninsula coast in the Indian Ocean. Birds seen off Somalia (Bailey 1971) are the closest to this new Kenya record and this species may occur off the East African coast more often than a single beach-cast carcass suggests.

Breeding normally takes place towards the end of December, with hatching in February, and fledging in mid-April. Both juveniles and other birds are at sea for the remainder of the year, consistent with the June date for the Watamu bird. Several birds of the genus *Fregatta* were seen off Somalia in 1964, the two identified as Black-bellied Storm Petrels being recorded on 11 and 12 August (Bailey 1971).

Table 2. *Wing, tarsus and culmen measurements of the Watamu beach-cast Black-bellied Storm Petrel in mm with comparisons from Beck & Brown (1971) (measurements in mm: mean \pm SD and range; males n = 10; females n = 16)*

| | | | | | Watamu specimen |
|--------|--------|-------|------------|-----------|-----------------|
| Wing | Male | 162.3 | \pm 4.92 | (154–170) | 186.5 |
| | Female | 170.8 | \pm 5.47 | (164–183) | |
| Tarsus | Male | 39.6 | \pm 0.84 | (39–41) | 43.8 |
| | Female | 40.8 | \pm 1.17 | (39–43) | |
| Culmen | Male | 15.3 | \pm 0.48 | (15–16) | 15.7 |
| | Female | 15.1 | \pm 0.68 | (14–16) | |

Antarctic Prion *Pachyptila desolata*

This account concerns two Antarctic Prion *P. desolata* heads found on Watamu beach (3° 22S, 40° 21E), one on 16 August 1988, the other on an unknown date, but at some time during that year. These records, which have only just come to light, are the first conclusive records for Kenya and East Africa. They support the one previous beach-cast specimen which was treated as a race of Broad-billed Prion *P. vittata desolata*, and found at the same site, on 3 August 1988 (EABR 1988). No further data are available for this specimen, but, for the others, measurements and explanatory notes are presented in Table 3. Only two weeks separate these dated records, so it is likely that a prion wreck occurred on Watamu beach that month. Measurements for another prion specimen (see Thin-billed Prion below) are also presented in Table 3.

The taxonomy of prions is notoriously complex, but, following the work of Falla (1940), supported by the exhaustive studies of Harper (1980), it was widely agreed that there are six prion taxa which might be recognized at species level: Broad-billed *Pachyptila vittata*, Salvin's *P. salvini*, Antarctic *P. desolata*, Thin-billed *P. belcheri* (these four colloquially known as whalebirds), and Fairy *P. turtur* and Fulmar *P. crassirostris* (the fairy prions). The manner of subdividing these taxa between species or subspecies continues to be debated, with a lumped arrangement (following Cox 1980) whereby Broad-billed includes Salvin's and Antarctic, Thin-billed remains monotypic, and Fairy includes Fulmar, being preferred in a popular guide to seabirds (Harrison 1985). These different arrangements are presented in Table 4.

In a recent review paper on prions in the Indian Ocean, Bretagnolle *et al.* (1990) have argued the case for recognizing six species and following Falla (1940). In their study of four taxa—Broad-billed, Salvin's, Antarctic, and Thin-billed Prion—analysis of morphometrics, diet, breeding biology, calls and genetics supported separation at species level. These, along with Fairy and Fulmar Prion, are also treated as good species in a new Handbook of Australian, New Zealand and Antarctic Birds (Marchant & Higgins 1990). We follow such an arrangement in this paper, as do the compilers of *Birds of Africa* (Brown *et al.* 1980). It differs from previous assessment of prions in Kenya (and East Africa) (e.g. Coverdale & Pearson 1984, Lewis & Pomeroy 1989), so a review of earlier Kenya records, as well as the new ones, is presented below.

Antarctic Prions have an Antarctic and Sub-antarctic distribution and breed on at least eight widely spaced islands: Kerguelen, Heard, Macquarie, Auckland, South Orkneys, South Georgia, South Sandwich and Scott (Marchant & Higgins 1990). Breeding occurs a little earlier than for storm petrels, with adults returning to breeding grounds in October, eggs being laid during December, and birds fledging in March. In the non-breeding season birds disperse north of 50°S, and regularly visit the South African coast, but are rare north into the Indian Ocean.

Table 3. *Culmen measurements (in mm: mean \pm SD and range) of Watamu birds compared with published data for five prion species (Broad-billed from Harper (1980); Fulmar from Brown et al. (1982); the rest from Bretagnolle et al. (1990))*

| | | Length | Width | Notes |
|--------------------|----------|----------------------------|---|-------|
| Watamu birds | | 29.7 | 13.0 | 1 |
| | | 29.2 | 12.8 | 2 |
| | | 26.6 | 10.8 | 3 |
| Published data | <i>n</i> | Length | Width | |
| Broad-billed Prion | 84 | 35.5 \pm 0.2 (32–38) | 21.6 \pm 0.1(18–25) (<i>n</i> = 129) | |
| Antarctic Prion | 63 | 27.2 \pm 1.0 (25.0–29.5) | 14.0 \pm 0.5(12.8–15.0) | |
| Salvin's Prion | 64 | 30.2 \pm 3.7 (28.0–35.3) | 17.2 \pm 0.7(15.5–18.6) | |
| Thin-billed Prion | 66 | 25.3 \pm 0.9 (23.0–27.3) | 11.4 \pm 0.4(10.2–12.5) | |
| Fairy Prion | 21 | 22.1 \pm 1.1 (20.0–24.0) | 11.1 \pm 0.7(10.2–12.8) | |
| Fulmar Prion | 7 | 23 (21–24) | | |

Notes:

1. Head found on 16 August 1988: some overlap on length, but culmen width too narrow for Broad-billed and Salvin's and too wide for Thin-billed.
2. Head found during 1988: the culminiform sheath was missing, so the measurements are slightly under-estimated, but they nevertheless rule out Broad-billed, Salvin's, Thin-billed, Fairy, and Fulmar.
3. Specimen found on 16 August 1984: length rules out Fairy and Fulmar Prion, while width excludes Broad-billed, Salvin's or Antarctic, identifying this bird as a Thin-billed Prion. See text also.

Thin-billed Prion *Pachyptila belcheri*

A third specimen, which is also held at the National Museums (labelled number B 9315), was found dead at Watamu on 16 August 1984 and described as a Broad-billed Prion. It is labelled as *P. vittata*, was originally assigned to the race *P.v. desolata* (EABR 1984), but measurements show that this bird is, in fact, a Thin-billed Prion.

Unlike the other material, the Thin-billed Prion skin is complete and the identification is supported by plumage features, e.g. comparatively distinct light supercilium and dark eye streak and thin dark tail band, as well as a wing measurement of 179 mm (which compares with wing details of mean 181 mm \pm 4 SD (range 172–190; *n* = 66) given in

Bretagnolle *et al.* 1990). Other measurements and explanations are given in Table 3.

The Thin-billed Prion has a pelagic circumpolar distribution ranging from Antarctic to subtropical waters. Main breeding localities are the Falkland Islands in the South Atlantic and the Kerguelen Islands and Îles Crozet's in the Indian Ocean. Birds generally return to breeding colonies from late August onwards. Egg laying occurs in November and chicks hatch during late December and January. Chicks fledge during late February and March.

Table 4. Showing the arrangement of *Pachyptila* taxa according to Falla (1940), Harper (1980), Brown *et al.* (1980), Marchant & Higgins (1990), Bretagnolle *et al.* (1990) and this paper (column A), and Cox (1980) and Harrison (1985) (column B)

| Common name | A | B |
|--------------------|-------------------------|----------------------------|
| Broad-billed Prion | <i>P. vittata</i> | <i>P. vittata vittata</i> |
| Salvin's Prion | <i>P. salvini</i> | <i>P. v. salvini</i> |
| Antarctic Prion | <i>P. desolata</i> | <i>P. v. desolata</i> |
| Thin-billed Prion | <i>P. belcheri</i> | <i>P. belcheri</i> |
| Fairy Prion | <i>P. turtur</i> | <i>P. turtur turtur</i> |
| Fulmar Prion | <i>P. crassirostris</i> | <i>P. t. crassirostris</i> |

The genus *Pachyptila* in Kenya

Only one field observation has been made, a Broad-billed Prion (*sensu* Cox 1980) seen offshore from Ras Ngomeni, north of Malindi, on 10 September 1983 (Coverdale & Pearson 1984). The bird was identified as a probable *P. v. desolata* (Antarctic) but neither *P. v. vittata* (Broad-billed) nor *P.v. salvini* (Salvin's) could be ruled out with certainty. The three beach-cast records from Watamu support identification as *P. desolata* (see above). Another record, of a probable prion seen off Shimoni on 25 August 1981, also exists (EABR 1981).

Outside Kenya, there is a record of two probable Broad-billed Prions (*sensu* Cox 1980) seen off south-east Tanzania in July 1965. A small wreck of prions, identified as *P. desolata desolata* (the nominate race from Kerguelen) was found on the coast of south-east Somalia in August 1979 (Ash 1983), again supporting the Kenya records.

In the light of the new records, and the splitting of the six prion taxa, Antarctic and Thin-billed Prion are the only species which have been recorded with certainty from Kenya. Previous records of Broad-billed Prion (Coverdale & Pearson 1984, EABR 1984) should be deleted from the Kenya list.

Beach-cast birds

A Leach's Storm Petrel found dead on 8 February 1967 at the mouth of Tiwi Creek was the first record for Kenya (Parsons 1969), and represents the only time that a new species has been accepted for the Kenya list from beach-cast material alone. A second bird, off Mtwapa on 4 October 1981, proved that Leach's Storm Petrel has flown to

within 5 km of the Kenya shore as well (Taylor 1982).

The Black-bellied Storm Petrel, Antarctic Prions and Thin-billed Prion described above represent a notable increase in the number of species which now need to be considered from beach-cast material alone. Other records, e.g. of a Red-footed Booby *Sula sula* found dead at Shanzu on 20 March 1978 (EABR 1978), have, however, also been accepted.

Such records present problems because of the obvious possibility that dead individuals may have been washed into territorial waters. Given that this may have been the case with the three petrel species, some justification exists for listing them (with any subsequent similar records) in a special category pending discovery of a live bird.

In Great Britain, beach-cast records are listed in a special Category D (B.O.U. 1971), but no such system exists in East Africa. With more interest in pelagics and better beach patrolling, the number of records from the tideline is likely to increase, and it seems essential that the recording of these birds should take account of their uncertain origins.

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John H. Fanshawe, Department of Ornithology, National Museums of Kenya, Box 40658 Nairobi, Kenya, Peter Prince, British Antarctic Survey, High Cross, Madingley Road, Cambridge, CB3 0ET, UK and Mary Irwin, Box 56 Watamu, Kenya